



Exploring Seafarers' Perceptions of Green Shipping Technology: The Contribution of Maritime English Mastery

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Abstract. This research explored the contribution of English language mastery to seafarers' perceptions of green shipping technology. The main purpose of this research was to evaluate the contribution of English mastery in promoting green shipping technologies and assess seafarers' perceptions of English language mastery toward green shipping technologies. The researcher utilized a qualitative research approach; interviews and indirect observation were conducted with seafarers to assess perceived language barriers, career advancement opportunities, and the relationship between language skills and technological adoption. Thus, the results indicated that seafarers with higher English mastery comprehend green technologies better and have a more positive and satisfying attitude toward them. Conversely, those with limited English skills experience challenges in understanding technical details and effective communication, leading to reluctance to use new technologies. Furthermore, cultural factors and practical experience with green shipping technologies were delved into in this research with seafarers, suggesting the need for more targeted training combining technical knowledge and maritime English. This research concluded that enhancing English mastery is important for adopting or applying green shipping technologies, as it facilitates better understanding, career growth, and motivation among seafarers.

Keywords: English mastery, seafarers' perceptions, green shipping technology, career advancement, maritime communication.

1 Introduction

1.1 Background

The maritime industry in each country is broadly concerned the sustainability of green-house technology, which is considered effective for minimizing emissions. This concern is supported by Liu, X., & Zhao, Y. (2022), whose research delved into the influence of energy-efficient engines and alternative fuels, revealing the crucial developments in green technology and sustainable shipping practices. It goes hand in hand with providing effective communication. Especially when the communication is provided in English.

English is widely recognized as an international language that facilitates communication between people from diverse countries. In the maritime industry, English plays a crucial role in supporting the implementation of various technologies. According to research by Sampson and Zhao (2003), having expert competence in English is essential for effective communication on board, especially in the multilingual environments often found in maritime workplaces. Green shipping technology, which is key to reducing environmental impact in the maritime sector, also requires clear communication, and strong English skills are necessary to achieve this. Additionally, a study by Mikulicic, Pavlovic, and Trgo (2023) highlights that proficiency in maritime English significantly contributes to both safety and sustainability on board ships. Therefore, effective vessel management relies on the mastery of maritime English combined with the implementation of green technologies, ensuring both operational efficiency and safety.

Perception plays a crucial role in how individuals interpret and respond to situations, particularly in the context of language learning and decision-making. According to Griffiths and Parr (2001), perception significantly influences how someone selects, applies, and evaluates the effectiveness of strategies that assist in language acquisition. Perceiving allows individuals to understand situations and anticipate future outcomes, ultimately contributing to the achievement of positive goals. For seafarers, the ability to relate their perception, knowledge, and experience to their job is essential for achieving a balanced and successful career, particularly in adapting to new technologies such as green shipping technology. This balance helps ensure both professional growth and the effective implementation of sustainable practices in the maritime industry.

In this research, the researcher explored seafarers' perceptions of the role of English language proficiency in promoting green shipping technology. The study aimed to investigate how mastery of English affects the understanding and acceptance of environmentally friendly technologies among seafarers. By examining this relationship, the research sought to identify the challenges faced by seafarers in adopting green shipping technologies and how their language skills influence their ability to comprehend and engage with these technologies. The research was conducted under the title "Exploring Seafarers' Perceptions of Green Shipping Technology: The Contribution of Maritime English Mastery." This study emphasizes the importance of maritime English in supporting the successful implementation of sustainable practices in the maritime industry.

1.2 Problem Statement

Promoting green shipping technology has become the main issue for the present day. Thus, the ability of seafarers or maritime professionals to comprehend and operate these technologies increasingly depends on the ability to clearly and effectively communicate in English. This study seeks to answer the question: How does the contribution of English language mastery affect seafarers' perceptions of green shipping technologies?

1.3 Research Objectives

To elucidate the contribution of English mastery in promoting green shipping technologies.

To evaluate or assess seafarers' perception of English language mastery toward green shipping technologies.

1.4 Significance of the Study

This research aimed to address the gap in the literature regarding seafarers' perceptions of the contribution of English language mastery to the adoption of green technologies in the maritime industry. In this context, Hassler and Gilek (2012) examined issues related to communication and air pollution from shipping. Their study highlighted that effective communication is hindered by significant barriers and emphasized the important role of regional organizations in improving communication. Additionally, the study pointed out that increasing marine environmental awareness is crucial for advancing sustainable practices in the shipping industry. This finding supports the idea that effective communication, particularly through a common language like English, is essential for promoting environmental sustainability in maritime operations.

2 Literature Review

2.1 Previous Study

James A.J. (2018): This research explored the influence of mastering English on meeting the maritime industry's requirements concerning student engagement. Then it resulted that English skills are crucial, especially maritime English, but there is limited focus on green shipping technology. Hence, this highlighted the need for more targeted research in this area.

2.2 Green Shipping Technologies

Green shipping technologies encompass various innovations aimed at reducing the negative environmental impact of the maritime industry. For instance, Bouman et al. (2017) highlighted technologies such as the use of LNG (liquefied natural gas) as an alternative fuel, as well as emission reduction systems like scrubbers and ballast water management devices. These technologies require not only a deep technical understanding but also effective communication skills, particularly in English, for successful implementation. Additionally, Carpenter (2021) explored strategies to enrich sustainability in the maritime sector, focusing on areas such as maritime transportation, education, security, sustainable fisheries, and the green economy. His work emphasized the importance of effective ocean governance to address both current and future challenges for sustainable development. This research delved into transdisciplinary analyses of sustainable maritime practices, underscoring the need for ongoing efforts to meet the diverse needs of stakeholders. The findings are aimed at

researchers, policymakers, and practitioners across various disciplines engaged in maritime transport and ocean governance.

2.3 Environmental Literacy

Environmental literacy is viewed as the ability to not only understand basic environmental issues but to critically analyze and engage with them. Today, it has become a vital skill across various sectors, including the maritime industry, due to the growing challenges brought by globalization. In maritime education, environmental literacy is especially relevant as this sector heavily impacts the marine ecosystem, which is critical not only for maritime operations but also for other interconnected industries (Simanjuntak, M. B., 2023).

2.4 English Mastery in the Maritime Industry

Sampson and Zhao (2003): This research explored the significant shift from traditional to modern merchant ships, including technological innovation at sea. It included Morse lamps, which were considered wholly redundant. Therefore, overwhelming this situation, English as the lingua franca of the sea has become crucial. For this reason, to improve English standards among seafarers and reduce accidents caused by poor communication, the industry has employed a 'top-down' approach to language learning. This study evaluated the effectiveness of this approach by examining the ethnographic research conducted on multilingual crew ships. This study investigated how the multicultural learning environment influenced international students and assisted them in increasing intercultural communication aspects. This research qualitatively found that multicultural learning experiences help future maritime leaders develop intercultural communication skills, which can strengthen their confidence in advanced maritime technical knowledge and skills gained in formal education.

2.5 Integration of Language and Technology

Language proficiency and sustainability are closely interconnected, particularly in the maritime industry. For seafarers and maritime officers, mastering an international language is essential to promote and advance marine environmental sustainability. Research by Lidström, S. (2023) delves into how language shapes our understanding of maritime sustainability. It highlights the role of maritime literacy in fostering knowledge and awareness of marine environments and examines how language actively influences our interpretation and engagement with sustainable maritime practices. This study underscores the importance of language in shaping perceptions and promoting sustainable actions within the maritime sector.

2.6 Perceptions

Limbong, S., Jabu, B., & Basri define perception as the collective experience and evaluation of Marlins, a platform for maritime English learning. Their study found that users were satisfied with Marlins' role in improving English skills, encouraging interaction, and supporting independent learning. Additionally, perception relates to how English proficiency is subjectively assessed by listeners, with a focus on fluency, comprehension, and interpretability. This study aims to shed light on how differing assessments of language ability may create communication challenges in global English-speaking environments.

3 Methodology

3.1 Research Design

The researcher employed a qualitative approach to deeply understand the contribution of English language mastery on seafarers' perceptions of green shipping technology. According to Creswell (2014), qualitative methods allow researchers to explore phenomena within their natural settings using interviews, observations, and document analysis. This approach is well-suited to examining how language proficiency influences the adoption of green shipping technology and assessing its impact on promoting sustainability in the maritime sector.

3.2 Data Collection

The researchers conducted several steps in the data collection process. Firstly, the researchers gathered fifteen seafarers (maritime professionals) working on ships who have an understanding or experience in green shipping technologies. The researchers interviewed participants such as ship engineers and ship officers. Furthermore, indirect observations were conducted on ships during routine operations to identify how English is used in communication related to green technologies. Flick (2014) highlighted the value of semi-structured interviews and observations in qualitative research, particularly in exploring complex, context-specific phenomena such as language use in technology adoption.

3.3 Data Analysis

In this research, the researchers analyzed the collected data using thematic analysis (Braun & Clarke, 2006). Thematic analysis offers a valuable avenue for developing theoretical understanding, generating nuanced interpretations, and contributing to knowledge advancement (FUCHS, K, 2023). This process involved systematically coding the data to identify key themes related to the contribution of English in promoting green shipping technologies. Babbie (2013) supports the use of thematic analysis in understanding patterns and themes in qualitative data, which is crucial for drawing meaningful conclusions from the study.

4 Findings and Discussions

4.1 Findings

In this study, the researchers presented findings from data collection and analysis, identifying several key themes that emerged. Through interviews, they explored questions aimed at uncovering seafarers' perspectives on green shipping technology, including their understanding of and attitudes toward this technology. The interview components covered perceptions and abilities, as well as challenges and motivations related to using English on board, providing insights into the role of English proficiency in supporting sustainable maritime practices. Based on the data, these research findings indicated that English language mastery played a significant contribution in shaping seafarers' experience and perceptions of green shipping technology. These findings would be spread out as follows.

The researchers highlighted that Seafarer A had limited experience with green technologies, coupled with inadequate English skills. As a result, Seafarer A viewed himself as lacking the ability to fully understand and apply these technologies. He felt that these barriers made it challenging to perform effectively on the ship, especially when attempting to communicate with crew members from various countries. This struggle affected his confidence and ability to engage in tasks requiring clear communication and technical understanding.

Seafarer B shared that having strong English skills, especially for onboard communication, significantly enhanced his experience on the ship. His proficiency in English also made it easier for him to understand and apply green technologies that were documented or presented in English. He recognized the critical role English mastery plays for modern seafarers. Meanwhile, Seafarer C mentioned that, despite having moderate English skills, he lacked practical experience with green shipping technology. He suggested that training could help overcome such barriers, enabling him and other seafarers with similar challenges to work on vessels utilizing green technologies more effectively. Furthermore, Seafarer D stated that English mastery is very important, especially when talking about green shipping technology because green shipping technology is very useful for our well-being environment. He noticed that culture was also affected by perceived and adopted technologies. Some people from different cultural backgrounds may have different attitudes toward green shipping, but strong English skills help bridge the gaps.

Seafarer E assumed that motivation is linked to his English skills. He stated that his better English would affect his motivation to learn about new technologies, including green shipping technologies. He thought when he could understand the materials and communication clearly, his motivation to adopt and apply green technology was also higher.

4.2 Discussions

The findings from the semi-structured interviews highlighted key themes regarding seafarers' perceptions of how English language proficiency contributes to understanding and adopting green shipping technology. Seafarers expressed that English skills not only improve their comprehension of green technology concepts but also play a vital role in enhancing communication and collaboration among multilingual crew members. This proficiency in English helps bridge language barriers, facilitating smoother interactions and a more cohesive team environment, which is essential for the successful implementation of environmentally friendly practices onboard.

The study identified perceived language barriers related to limited English proficiency, particularly in Seafarer A's experience. With limited English mastery, Seafarer A faced significant challenges in understanding and implementing green shipping technologies. This finding aligns with previous research by Miskin & Dongarkar (2022), who noted that language barriers can impede effective communication, even among individuals with similar backgrounds or roles. As cited in Kamal, Sakrani, & Maidin (2021), these barriers may lead to misunderstandings or communication breakdowns, even between individuals who share similar communication challenges.

The research highlighted "English Mastery as a Driver for Career Advancement and Technological Adaptation" based on insights from Seafarer B. This theme reflects the perception that proficiency in English supports both career progression and the ability to adapt to technological advances onboard. Seafarer B expressed that having strong English skills, particularly for on-board communication, has significantly accelerated his experience and competence in managing green shipping technology. This aligns with findings by Kilpi, Solakivi, & Kiiski (2023), which emphasize the importance of general skills, such as English proficiency, to keep pace with technological developments in the maritime sector.

Lack of practical experience and training needs. This data referred to Seafarer C's perception that he didn't have any hands-on experience with green shipping technology, though he had moderate ability in English skills. Even though he perceived that his barriers to green shipping technologies would be overcome by joining the training. This is aligned with *The Theory and Practice of Training* by Buckley and Caple (2009), which highlighted that training is effective for learning and practical experience is crucial for applying and refining the skills in real scenarios. Both are important for reaching effectiveness.

Cultural influence. The researcher revealed the cultural influence based on the data gathered. The seafarer D noticed that culture also affected perceiving and adopting the technologies. Some people from different cultural backgrounds may have different attitudes toward green shipping, but strong English skills help bridge the gaps. This data is supported by the research examined by Lee, S.-G., Trimi, S., & Kim, C. (2013) elucidated that cultural influences helped companies and policymakers tailor their approaches to technology adoption and development.

Motivation and language mastery in technology adoption. Seafarer E assumed that motivation is linked to his English skills. He stated that his better English would affect his motivation to learn about new technologies, including green shipping technologies. He thought when he could understand the materials and communication clearly, his motivation to adopt and apply green technology was also higher. This is connected to Guilloteaux, M. J., & Dörnyei, Z. (2011) research, which investigated motivational techniques that assisted in engaging language learning and likewise adopting technologies.

5 Conclusions

This research investigated how English skills influenced seafarers' perceptions of green shipping technology. It was revealed that seafarers with better English skills not only understood green technologies better but also perceived them more positively. Therefore, seafarers who have poor English skills struggle to comprehend technical details and communicate effectively with multilingual crews. This case led to reluctance toward promoting technologies.

Furthermore, this research also revealed that better English skills resulted in career growth and motivation. Those who are rich in English skills perceived themselves as more competent and motivated to engage with green technologies. Besides that, cultural influence acted as a bridge to connect better English skills and green shipping technologies.

Additionally, the minimum practical experience with green shipping technologies emphasized by some seafarers recommended the necessity for more targeted training, combining technical knowledge with maritime English. This would address the perceived challenges and increase self-confidence in adopting green innovations.

To sum up, seafarers' perceptions of green shipping technology are strongly associated with their English mastery. Enhancing language skills not only enriched understanding but also adopted a more positive attitude toward sustainable practices, resulting in the effective adoption of green shipping technologies in the maritime sectors.

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